

Notes: In groups have students solve a question collaboratively.

Questions:

- 1) $x - 3y = 5$
2) $7x + 2y = 12$

Isolate x in ①

$$x = 3y + 5$$

Therefore the POI is (2, -1)

- 1) $6x + 5y = 7$
2) $x - y = 3$

Isolate x in ②

$$x - y = 3$$

$$x = y + 3$$

∴ the POI is (2, -1)

Sub ① into ②

$$\begin{aligned} 7x + 2y &= 12 \\ 7(3y + 5) + 2y &= 12 \\ 21y + 35 + 2y &= 12 \\ 21y + 2y &= 12 - 35 \\ 23y &= -23 \\ \frac{23y}{23} &= \frac{-23}{23} \\ y &= -1 \end{aligned}$$

Answers:

Sub y = -1 into ①

$$\begin{aligned} x &= 3y + 5 \\ &= 3(-1) + 5 \\ x &= 2 \end{aligned}$$

(2, -1)

Sub ② into ①

$$\begin{aligned} 6x + 5y &= 7 \\ 6(y + 3) + 5y &= 7 \\ 6y + 18 + 5y &= 7 \end{aligned}$$

$$\begin{aligned} 11y &= 7 - 18 \\ 11y &= -11 \\ \frac{11y}{11} &= \frac{-11}{11} \\ y &= -1 \end{aligned}$$

Sub y = -1 into ②

$$\begin{aligned} x - (-1) &= 3 \\ x + 1 &= 3 \\ x &= 3 - 1 \\ x &= 2 \end{aligned}$$

- 1) $x - 3y = -2$
- 2) $2x + 5y = 7$

(1,1)

Isolate x in ①

$$x - 3y = -2$$

$$x = \boxed{-2 + 3y}$$

Sub ① into ②

$$2x + 5y = 7$$

$$2(-2 + 3y) + 5y = 7$$

$$-4 + 6y + 5y = 7$$

$$11y = 7 + 4$$

$$\frac{11y}{11} = \frac{11}{11}$$

$$y = 1$$

Sub $y=1$ into ②

$$2x + 5y = 7$$

$$2x + 5(1) = 7$$

$$2x = 7 - 5$$

$$\frac{2x}{2} = \frac{2}{2}$$

$$x = 1$$

∴ the POI is (1,1)

- 1) $2x + 3y = -1$
- 2) $x + y = 1$

(4,-3)

Isolate x in ②

$$x + y = 1$$

$$x = \boxed{1 - y}$$

Sub ① into ②

$$2x + 3y = -1$$

$$2(1 - y) + 3y = -1$$

$$2 - 2y + 3y = -1$$

$$-2y + 3y = -1 - 2$$

$$y = -3$$

Sub $y = -3$ into ①

$$x - 3 = 1$$

$$x = 1 + 3$$

$$x = 4$$

∴ the POI is (4,-3)

1) $2x + y = 3$

2) $4x - 3y = 1$

(1,1)

isolate y in ①

1) $x + 4y = 5$

2) $x + 2y = 7$

(9,-1)